RESEARCH

Cariboo Forest Region

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EXTENSION NOTE #12
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Demonstration of Alternative Silvicultural Systems for Lodgepole Pine

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Lodgepole pine is a significant species in the very dry, very cold Montane Spruce (MSxv) biogeoclimatic subzone. At mid to upper elevations on the western Fraser Plateau and at mid elevations on the eastern slopes of the Coast Mountains, many forests are important habitat for northern caribou. *Terrestrial* (ground) and *arboreal* (tree-borne) *lichens* provide the primary winter food source for northern caribou. The current silvicultural system in these stands has been clearcutting, which largely removes the lichen component.

The purpose of this pilot trial is to demonstrate alternative silvicultural systems with different timber harvesting methods to retain both cover and some forage for northern caribou in integrated management zones.

STUDY OBJECTIVES

A pilot demonstration area (Phase I) of approximately 35 hectares will be established in spring 1994 in the MSxv subzone of the Chilcotin Forest District. The pilot trial will demonstrate the results of different alternative silvicultural systems and test the effectiveness of the Valmet Harvester and Forwarder from Sweden.

Phase II of the project, a demonstration area of approximately 500 hectares, will be initiated in spring 1995 and established in the vicinity of Phase I. The primary objective of Phase II is to demonstrate potential forest management systems that may reduce the impact on northern caribou habitat.

The specific objectives of Phase II are to monitor treatment impact on:

- lichen abundance and growth,
- natural regeneration,
- site disturbance,
- soil nutrient status,
- selected elements of stand level biodiversity, and
- forest health, specifically mountain pine beetle and Ips.

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STUDY PARTICIPANTS

The study will be conducted by Forest Sciences of the Cariboo Forest Region; Chilcotin Forest District staff; Ministry of Environment, Lands and Parks; and Jacobson Brothers Forest Products Ltd., Williams Lake.

TREATMENTS

Several different silvicultural systems (clearcut, modified clearcut, group retention and uniform group selection) will be combined with two harvesting methods – conventional fellerbuncher and skidder harvesting, and the Valmet Harvester and Forwarder. The four silvicultural systems are:

CLEARCUT

The five clearcut areas will be:

- 75-85 ha,
- 20-25 ha within an 80 ha block,
- 8-10 ha within a 40 ha block,
- 1-2 ha within a 40 ha block, and
- 100-200 m wide strip clearcuts.

The smallest three clearcuts will have 50-75% of the volume removed in the first pass. The remaining volume and the block buffers will be removed in the second pass, expected in approximately 60-80 years when arboreal lichens have re-established in the young stand.

ISLAND REMNANTS WITHIN AN 80 HA CLEARCUT

Islands of 1-3 ha throughout the clearcut will retain approximately 15-20% of the original volume. Islands will be selected prior to harvesting based on their lichen abundance and windfirmness. They will also provide certain elements of biodiversity as well as visual breaks in the landscape.

GROUP RETENTION FOR CARIBOU

Numerous groups of 10 to 15 trees will be left within an 80 ha block as an arboreal lichen source, and for biodiversity and forest cover. Approximately 20-30% of the volume will be retained which is expected to open the stand enough to provide sufficient light and heat for natural pine regeneration.

UNIFORM GROUP SELECTION

A 20-30 hectare portion of the area will be harvested as a uniform small group selection. Approximately 30% of the volume will be removed in small groups of 2-6 trees. This system is designed to mimic the existing open-grown condition of these multi-aged pine stands.

MEASUREMENTS

The site will be established for demonstration of the silvicultural systems and harvesting methods.

Monitoring of the following will be conducted:

- pre- and post-harvesting arboreal and terrestrial lichen levels to determine harvesting impacts and rate of lichen re-establishment;
- natural regeneration, including cone serotiny and seed shed;
- site disturbance surveys to assess forest floor displacement, surface erosion, and soil displacement and compaction;
- long-term soil nutrient status differences between the harvesting methods;
- elements of biodiversity, such as coarse woody debris, small mammal populations, habitat fragmentation and snag dynamics; and
- occurrence and spread of mountain pine beetle, Ips and western gall rust.

SCHEDULE

The pilot demonstration site (Phase I) will be harvested in spring 1994. The larger demonstration site (Phase II) will be harvested in spring 1995.

CONTACT

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